

IllumiNation

JAN - MAR 2022

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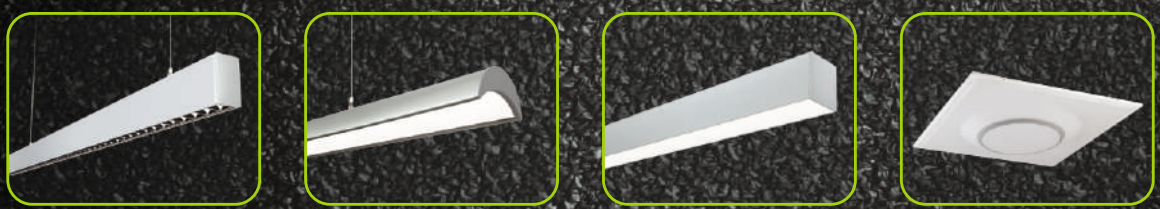
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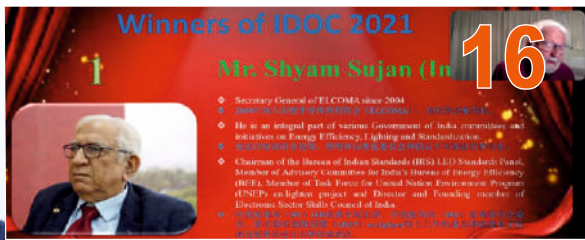


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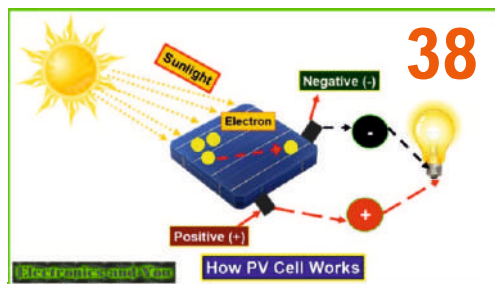
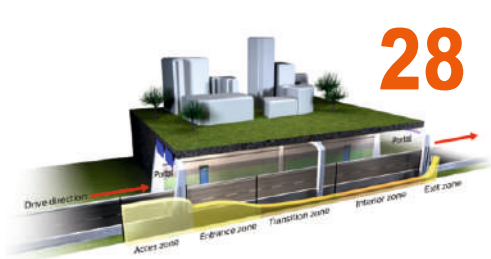
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A Self-Reliant India

ELCOMA's Vision 2024, launched just few months back, has seen a lot of progress on various programs identified to be executed by year 2024. The most important action by the government in this direction is the announcement regarding PLI for Semiconductor manufacturing with a financial outlay of Rs. 76,000 crores. As part of the Vision document, we had prepared a list of components that were proposed to be made in India, including chip manufacturing. The government has already shortlisted a list of 16 manufacturers for LED Lighting under the PLI scheme who have committed investments of above Rs. 700 crores to make components in India. ELCOMA has already begun an initiative to design and eventually manufacture IC chips for LED Lamp drivers keeping Indian conditions in mind. This proposal is under consideration of ELCOMA members and MeitY and if approved will pave the way for the first indigenized IC.

Though promotion of exports of Lighting products is expected to kick-start in early 2023, we have already started preparing various proposals to facilitate this activity. Special committees have been created for Components Manufacture and Exports Promotion, to a) facilitate preparation of agenda to execute these programs, b) identify milestones and c) monitoring progress on regular intervals.

True to its commitment, ELCOMA is always proactively taking steps to fulfill its Vision and Mission to ensure the Indian Lighting Industry has a bright future.

Best wishes

A handwritten signature in black ink that reads "Shyam Sujan".

SHYAM SUJAN

Secretary General

Electric Lamp and Component Manufacturers Association of India (ELCOMA)

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Its time for Change

In the last few quarters of this year, apart from the Delta and Omicron variants of COVID-19, the world has also witnessed unprecedented natural disasters such as extreme wildfires, colossal storms, unexpected heavy rains, landslides, droughts, and floods. These are no longer an anomaly. They are the new norms, and we now must learn to live with the hardships of climate change as a regular part of life.

ELCOMA members are on the forefront and have always extended support to people during natural and man-made disasters through various philanthropic actions under their Corporate Social Responsibilities. And of course, ensuring the uninterrupted supply of one of the most essential necessities of life, lighting, to the doorstep of each and every customer in all corners of India.

Climate change is real, and our Prime Minister Shri Narendra Modi delivered a very timely address to the world during the recent COP26 summit in Glasgow where he recommended following the formula of One Sun, One World, One Grid. This will open up new avenues for the lighting industry to start preparing for products that will work on Solar grids.

To start with, planning for large scale installation of Solar Street Lights in rural India will be required. ELCOMA is in dialogue with the government and EESL in preparing a national plan for this activity. We believe that the preparation of a LVDC Grid System based on Solar energy will play a very important role in enhancing this program. The utilities we work with must also change to meet the demands of today and of the future as well. Privatization and technology have played a very important role in enhancing the service levels of utilities. While they have downsized their workforces to the bare minimum and rather than hiring a permanent workforce, utilities are relying more and more on contractual labour, it is important that the frontline personnel are trained by industry professionals to work more efficiently and effectively.

The recent cabinet approval of 76,000 crore program for development of semiconductor and display manufacturing ecosystem in the country will greatly change in near future the sourcing pattern of electronic components for lighting industry, make supply-chains more resilient and stable, and help achieve long-standing vision of ELCOMA and its industry members of greater localization of lighting products.

Welcome to the new normal where change is the only constant!

Best wishes

A handwritten signature in black ink, reading 'Sumit Joshi', with a horizontal line underneath.

SUMIT PADMAKAR JOSHI
President, ELCOMA



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Innovating Success

IllumiNation in conversation with Mr. Rakesh Zutshi, Managing Director, Halonix Technologies Private Limited about his achievements and future plans.

You have a vast experience of working in some of India's best organizations. How did your career journey at Halonix start and what changes you have seen in this organization during your working career here?

I was a part of the change management when Private Equity Actis invested in Halonix. I joined as Sales and Marketing Head in Halonix when it was still predominantly an Automotive lighting manufacturer. At that point Halonix also had significant private labelling business in the General Lighting with the highest installed capacity for CFL manufacturing.

Halonix decided to move out of the private labelling business in 2011 for CFLs and start focus on brand building. The General Lighting business was carved out of the automotive lighting business and became an independent entity called Halonix Technologies Private Limited in 2013. I was the first head of this organization. The private labelling business was a loss-making venture and the company turned into profitability within the first year of branded business post 2013. We were the biggest manufacturer of CFL and had the widest range. Subsequently in 2016 LEDs replaced CFLs and it was a difficult transition as government intervention did not give any time for transition from CFL to LED. However due to our strength in design and in-house manufacturing of electronics, we were able to pivot the business and continue our growth story in LED.

What kind of challenges did you face at that the time when you joined Halonix. How did you overcome these challenges to ensure that the organization has reached where it is today?

When I started HTPL in 2013, we did not have any organisation or infrastructure in place. We had to start from scratch including getting people on board, rolling out a distribution network

pan India and carrying out major restructuring within the organisation as we had inherited 3 manufacturing facilities. Within the first year we had consolidated our manufacturing in Haridwar, put a fantastic team in place and set up systems which were both enablers as well as guard rails. All this was made possible by the team that had come on board which was as passionate and driven about making Halonix one of the best companies in India. We are proud to have built a learning organisation which was not scared of questioning traditional ideas and taking risks based on our learning and beliefs.

Halonix has carved a niche for itself by adding high-tech products like Speaker Bulb, Inverter lamps, motion sensor products, 3 CCT products, etc developed by in-house product design and development team. Do you find a good market in future for these products? What percentage of your product portfolio consists of these products?

Once LED was mainstream by 2016-17, we realised that being a semi-conductor, LED allowed us to experiment and innovate with numerous possibilities. CFL and Incandescent technologies had limitations with what you could do with them, but LED offers limitless options - both within lighting and ability to integrate it with other electronic products. Halonix realised this possibility before other players and embarked on a journey of differentiation and innovation in 2018. Today our core mantra is innovation and how we can use technology to make things interesting while at the same time useful for a consumer. None of the products we introduce are gimmicks. Innovation is an ongoing process and all these products were not launched all at once. All of them are a result of thorough research, consumer insights and being able to produce it at a price which is compelling. Our strength in designing

Rakesh Zutshi, Managing Director of Halonix Technologies is a well known figure in the Indian Lighting fraternity. He has been a past president of ELCOMA and his contribution to the industry on various ELCOMA platforms such as conferences, exhibitions etc is well recognised and appreciated

Halonix is amongst India's fastest growing electrical companies that caters to both retail and institutional buyers with its innovative and smart-tech offerings across Lighting, Fans, Smart IOT products and products focusing on Safety & Security.

Halonix was the first CFL manufacturer that pioneered energy efficiency and introduced LED lighting solutions in India. Today, Halonix is one of the top lighting brands in the lighting India.

and manufacturing has been instrumental in making these concepts into usable, customer friendly products. Our sales team also had a learning curve to be able to market these products. To their credit, we have now perfected a Go-To-Market template for any new product launch which almost assures us of the successful placement of our products.

As India evolves and more discretionary incomes are available to consumers, we will see that the demand for aesthetic, differentiated products will go up and a new class of solutions will emerge. It is difficult to hazard a guess, but I believe that such a new class of products will be more than half of the industry size in 3-5 years.

What is Halonix Shield? Can you explain more about this technology for our readers?

Halonix looks at electronics as one industry and we are going to be more of

CAPTAIN SPEAKS

an FMEG industry rather than electrical industry as we go forward. Companies that are able to make the transition will be the leaders of tomorrow, while those who fail to adapt maybe looking at extinction. The ability to define and navigate future developments is what will set companies apart and we will see that traders will find the going tough.

Halonix's Shield is the latest foray to provide innovative, value-for-money solutions to meet safety, security and hygiene needs of fellow Indians. Shield is the sub-brand that will introduce products for security and hygiene and is an amalgamation of various technologies coming together for a seamless experience of a consumer. Halonix Shield brings novel, state-of-the-art, indigenously manufactured UVC sanitisation products and solutions for residential as well as institutional use.

It was just a coincidence that we launched a few Shield products when the COVID pandemic was raging, but the ambit of Shield is much more than pure disinfectants. We have already come with an off-the-shelf use fire alarm for small homes and entities and there is a stream of products scheduled for launch in near future.

What are your future plans for Halonix?

We do not see ourselves as LED lighting company. We are good at designing electronics and then manufacture them at a very competitive cost. We are looking to be an FMEG company which will have unique and VFM products for the Indian conditions, Indian customers and manufactured in India. I am sure that you will get to hear a lot more about Halonix going forward.

How did plan to start manufacturing Fans and other domestic appliances?

What products are you planning to add to the portfolio in this segment?

Just as LED was a disruption for lighting, brush less motor is a disruption

for fans. We believe that there is place for new entrants in this market especially those who will have the capability of mastering the electronics part and manufacturing. Brushless motors have a universal usage and we are looking at making a first move in this category. I cannot speak about the pipeline, but we definitely have plans to benefit from the disruption as it unfolds.

COVID19 caused a great setback to most businesses around the world. Slowly, it is becoming the new normal. What is your opinion on this?

COVID is the new normal and it will be there for the foreseeable future. The virus has the capacity to mutate and it will keep rearing its head every time we think it is behind us. Our hope is that over a period of time it becomes endemic like a common cold through vigorous developments and usage of vaccines. However in the short term we will have local disruptions and upheavals, though I don't see a global fallout. We are better prepared this time than we were in the earlier 2 waves.

What is your vision, say for the next 5 years, where you find the Lighting Industry to be?

I expect a lot of consolidation in the next 5 years and companies which are able to adapt and navigate technological changes will survive and prosper. Lighting will be a part of the overall FMEG industry where technologies will integrate leading to emergence of new and innovative solutions.

Would you like to give a message to ELCOMA members?

ELCOMA has been a great forum for interaction within the industry and for industry's interactions with the government. The way it has been able to navigate the industry through upheavals and align the interests of the industry with the government has been absolutely commendable. I see ELCOMA as critical resource to lay out a future path

and get all the stakeholders including the government on the same page. We need to strengthen it so that it can play a positive and constructive role in the evolution of the industry.

IN A LIGHTER VEIN

How do you unwind after a hectic day or week at work?

I find walks very soothing. It is a me-time and gives you time to assimilate and articulate your thoughts.

What is/are your favourite holiday destination/s?

I am a travelaholic. I find every new place interesting and something to look forward to. Though personally my favourite has to be Italy for the share varied experiences from history, food, the mountains in the north and surrounded by some of the most beautiful beaches in the world. Add the laconic, unhurried lifestyle and you have it all.

What kind of food/cuisine do you like?

All. I have never found any food which I don't like. Though we are mutton eaters as a community, so I am slightly partial towards that.

Which is/are your favourite restaurant/s?

I have had some of the best food in shepherd huts where the ingredients are as fresh as you can get, while some highly rated restaurants have been disappointing. While eating out I don't like the same food time and again and do end up experimenting with mixed results.

What is your inspiration in life?

Live today, tomorrow is another day.

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EDITORIAL TEAM

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Garnet



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- Driver with 2.5 kV surge protection
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Recipe for Success

IllumiNation chats with Amit Khandelwal on what the future holds for R K Lighting

R. K. group is a family-owned business with roots spanning over half a century. The story of RK began through the entrepreneurial drive of Mr Ramnivas Khandelwal who established the environment necessary for the formation of the group. He passed on his business acumen to his son, S.R. Khandelwal who oversaw the expansion of the company from its modest operations to transform it into one of India's largest manufacturers of lighting fittings. Amit Khandelwal joined the family business aged 16 and started running the business under the excellent tutelage of his father S R Khandelwal. He has led the company through the disruption in the lighting market caused by the advent of LED based lighting, expanding RK's capabilities to capitalize on this new technology and transformed the small family owned business into one of the world's largest LED product manufacturers. The group has 18 manufacturing plants and annual revenue of over US\$100 million.

Please tell us a bit about your early years as an entrepreneur.

I am from a business family, where my father and my grandfather worked extremely hard to create a brand that is today synonymous with quality manufacturing. Looking up at their towering achievements, helped me to channel my focus and I immersed myself into following their footsteps from the time I was 16 years old.

What kind of challenges did you face at that young age and how you have overcome to reach where you are today?

In 1987, there was no Internet and access to good knowledge was very limited. It took years of hard work, self-determination, long hours of working tirelessly and non-stop to reach where I am at the moment.

R. K. Lighting is one of the fastest growing LED Lighting manufacturers in India. What are your future plans?

We plan to start manufacturing appliances and other high value consumer electronics driven by artificial intelligence and scale up the organisation to become one of the world's largest manufacturer of LED and other electronic products by December 2025. We are calling this our "Mission 2025".

Your organization has been approved for the government's PLI scheme for component manufacturing. How did you decide to become part of this and what products are you planning to manufacture under the scheme?

The seeds of this investment was sown in my mind with the advent of COVID-19, which disrupted the total electronic components supply chain and the well-being of all Indians in particular and the world at large. I also made up my mind to become totally Atmanirbhar as per the dreams of our Hon'ble Prime Minister Shri Narendra Modi ji. We plan to make mechanical housing, inductors, diffuser, MCPCB and pressure die casting components under the PLI scheme.

With the advent of emerging technologies like IoT and Intelligent Lighting, what are the new products you are planning to introduce in this segment?

We have already started manufacturing of smart LED battens, and we are under final stage validation of smart bulb, smart panels, smart office lighting and smart retail lighting. Besides, we have also developed smart switches.

COVID-19 caused a huge setback to most businesses around the world and

now slowly things are reverting back to a new normal. What is your opinion of the pandemic and the future post-COVID?

COVID 19 was a major shock to all of us and it changed the way we lived our lives and we also had to start working from home and on virtual meetings at home and I feel that this new normal will prevail for the next 6 months. We have realigned our raw material planning and developed raw material sourcing from local sources to tide over the uncertainty of logistics and supply issues of mechanical housing from China.

What is your vision for the next 5 years and where do you see R. K. Lighting in the future?

In "Mission 2025" we plan to reach sales top line of 5000 INR crores and expect to grow by 45 percent on year-on-year basis. We plan to diversify and add new business verticals to enable us to reach our aspirational target. We wish to be the best in every field we venture into and I want R. K. Lighting to be looked at as the benchmark for excellence in the times to come.

IN A LIGHTER VEIN

Favourite Food : Home-made Indian food

Favorite Holiday : Mahabaleshwar Destination

Favourite Restaurant : ITC, Peshawari

How do you unwind after a hectic day or week at work?

I play with my pet dog

Who is your inspiration in life?

My father has always been my inspiration and hero life

INTERVIEWED BY ILLUMINATION EDITORIAL TEAM

Shyam Sujan wins First Global ISA IDOC Award



In the recently held Award Ceremony of ISA, Prof. Warren Julian, council member of International Solid State Lighting Alliance (ISA), announced the awards for the laureates of IDOC 2021. The IDOC awards were established by the ISA in its 12th Executive Member Meeting, with an aim to promote the global SSL sustainable development by recognizing the industry organizations, project teams, industry leaders, institutions, etc. that have made outstanding contributions to the SSL development at regional/global levels within a certain period of time or historical period.

Announcing the 6 winners of these global awards, Mr. Shyam Sujan received highest scores and ranking. Expressing his appreciation of Mr Sujan's efforts in promoting energy efficiency in India and also serving the Lighting Industry as a visionary he said that "Mr. Shyam Sujan (India) is the Secretary General of ELCOMA since 2004. He is an integral part of various Government of India committees and initiatives on Energy Efficiency, Lighting and Standardization including a stint as the Chairman of the Bureau of Indian Standards (BIS) LED Standards Panel from 2012 to 2015, Member of Advisory Committee for India's Bureau of Energy Efficiency (BEE), Member of

Task Force for United Nation Environment Program (UNEP) en.lighten project and Director and Founding member of Electronic Sector Skills Council of India".

Briefly outlining Mr Sujan's achievements, Prof Julian stated that "Mr. Sujan has played a very important role in bringing efficient Lighting technology to India and was instrumental in introducing CFL technology in 2004 and LED Technology in 2010 to India. He was instrumental in securing the growth of manufacturing of CFL Lamps in India, from 20 million pieces in 2004 to 600 million pieces per annum in 2008. The Vision 2020 and Vision 2024 documents created by Mr. Sujan and presented to the Government of India led to one of the largest LED Retrofit programs in the world with over 1.2 billion LED lamps and 30 million LED Street Lights

installed and distributed which led to power saving of more than 50000 MW. He is also championing the cause of local manufacturing in India and has secured commitment from the Indian Lighting Industry to manufacture at least 80% of electronic components in India and export more than 40% of lighting turnover by the year 2024. Mr. Sujan has played a very important role in making standards for Lighting products India centric and has also been instrumental in representing India in all International forums and has built relationships with the global lighting fraternity."

In his acceptance speech Mr Sujan said that he was very honoured to receive this international lighting award and accepted it with gratitude. He valued the award and considered it a global recognition of the work done by him, his colleagues in ELCOMA and the entire SSL industry of India.

"Mr Sujan is an outstanding figure of two eras of lighting - lamp and LED! A hospitable organizer of conferences in India, an active member of international events. As an economist Shyam Sujan has promoted energy conservation by initiating introduction of new and efficient products to the country, saving energy and contributing to the environment"

Jury Member



R.K. Group is a family owned and operated business with roots spanning over half a century.

R.K. Group is one of the largest manufacturers of LED lighting products in India. We have 18 state of the art manufacturing facilities and over 100 Million USD in revenue.

We constantly keep investing in our R&D activities to ensure that our products are of the highest quality.

We have a customer first approach in all our activities and do everything humanly possible to ensure that our customers are always delighted.

Our valued customers include: Philips, Havells, Wirpo, Crompton, Syska, Orient Electric, Bajaj, Panasonic, Ledvance, GreatWhite, GM, Jaquar, Polycab, Tisva, Indiabulls, Eveready, Finolex etc.

Daily Manufacturing capacity:

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Upcoming product range



12W Inverter Bulb



Inverter Panel Sries



COB Series



Smart Batten/ Motion sensor Batten

R. K. Group Of Companies

R. K. Lighting Pvt. Ltd. | Radhika Opto Electronics Pvt. Ltd. | Cromlux Engineers Pvt. Ltd.

PM Modi Launches “One Sun, One World, One Grid” concept at COP26 Summit



In the inaugural speech of COP 26 summit at Glasgow on 2nd November 2021, PM Narendra Modi announced a concept of 'One Sun, One World, One Grid'. With the initiatives from the International Solar Alliance and the UK's Green Grid Initiative, Mr. Modi said, “my many-year-old vision of 'One Sun, One World, One Grid' got a concrete shape today. Excellencies, the industrial revolution was fuelled by fossil fuels. Many countries have prospered by the use of fossil fuels, but our earth, our environment has become poorer. The race for fossil fuels also created geopolitical tensions. But today technology has given us a great alternative.”

Talking of Indian scriptures written by India's sages and mentors in Upanishads, he said, “In the Surya Upanishad, thousands of years ago, it was said, **सूर्याद भवन्ति भूतानि सूर्येण पालितानि तु॥** (Suryaad bhavanti bhutani, suryen palitani tu). In other words, everything has originated from the Sun, the source of all energy is the Sun, and everything is sustained by the energy of the Sun. Ever since life originated on Earth, the life cycle of all living beings, and their routine, has been

linked to the sunrise and sunset. As long as this natural connect has continued, our planet remained healthy. But in the modern era, man in the race to overtake the cycle set by the sun, disturbed the natural balance, and caused great damage to his environment. If we are to re-establish a balanced life with nature, the path of this will be illuminated by our sun. We have to walk along with the sun again to save the future of humanity.”

Giving statistics on Solar consumption, he mentioned that the quantum of energy that the entire human race consumes in a year, the sun gives the same amount of energy to the earth in one hour. And this enormous energy is completely clean, sustainable. He added that the only challenge is that solar energy is available only during the day and is also weather dependent. 'One Sun, One World, One Grid' is a solution to this challenge. Clean energy from a world-wide grid will be available everywhere at all times. This will also reduce the need for storage and increase the viability of solar projects. He assured the global fraternity that this creative initiative will not only reduce the carbon footprint and cost of energy, but will also open a new avenue of cooperation between different regions and countries. He said he is confident that the synergy of One Sun, One World, One Grid and Green-Grid Initiatives will lead to the development of a cohesive and robust global grid.

Concluding his brief speech, Modiji

said, “I also want to inform today that our space agency, ISRO is going to present a solar calculator application to the world. With this calculator, the solar power potential of any place in the world can be measured based on satellite data. This application will be useful in deciding the location of solar projects and will also strengthen 'One Sun, One World, One Grid'. Once again, I congratulate ISA, and thank my friend Boris for his cooperation. I would also like to express my gratitude to the leaders of all other countries for their presence.”

For the information of the readers of IllumiNation, we would like to say that International Solar Alliance was initiated by India, headed by Dr Ajay Mathur, the Director General of ISA. The Solar Alliance (ISA) was conceived as a coalition of solar-resource-rich countries (which lie either completely or partly between the Tropic of Cancer and the Tropic of Capricorn) to address their special energy needs. The ISA will provide a dedicated platform for cooperation among solar-resource-rich countries, through which the global community, including governments, bilateral and multilateral organizations, corporates, industry, and other stakeholders, can contribute to help achieve the common goal of increasing the use and quality of solar energy in meeting energy needs of prospective ISA member countries in a safe, convenient, affordable, equitable and sustainable manner.

AUTHORS :ILLUMINATION EDITORIAL BOARD WITH INPUTS FROM GOVERNMENT'S PRESS RELEASE



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The new NIGHT BREAKER® 200

Introducing our brightest halogen headlight, ever—the NIGHT BREAKER® 200. With up to 200% more brightness¹ to guide your way, this high-performance halogen lamp enhances your ability to drive safer at night. Globally approved for road use, its 20% whiter light¹ offers a modern look that's sure to impress, an eye-catching upgrade for your headlights. And with a 150m light beam, you can see farther and detect signs and obstacles sooner—wherever your journey takes you.

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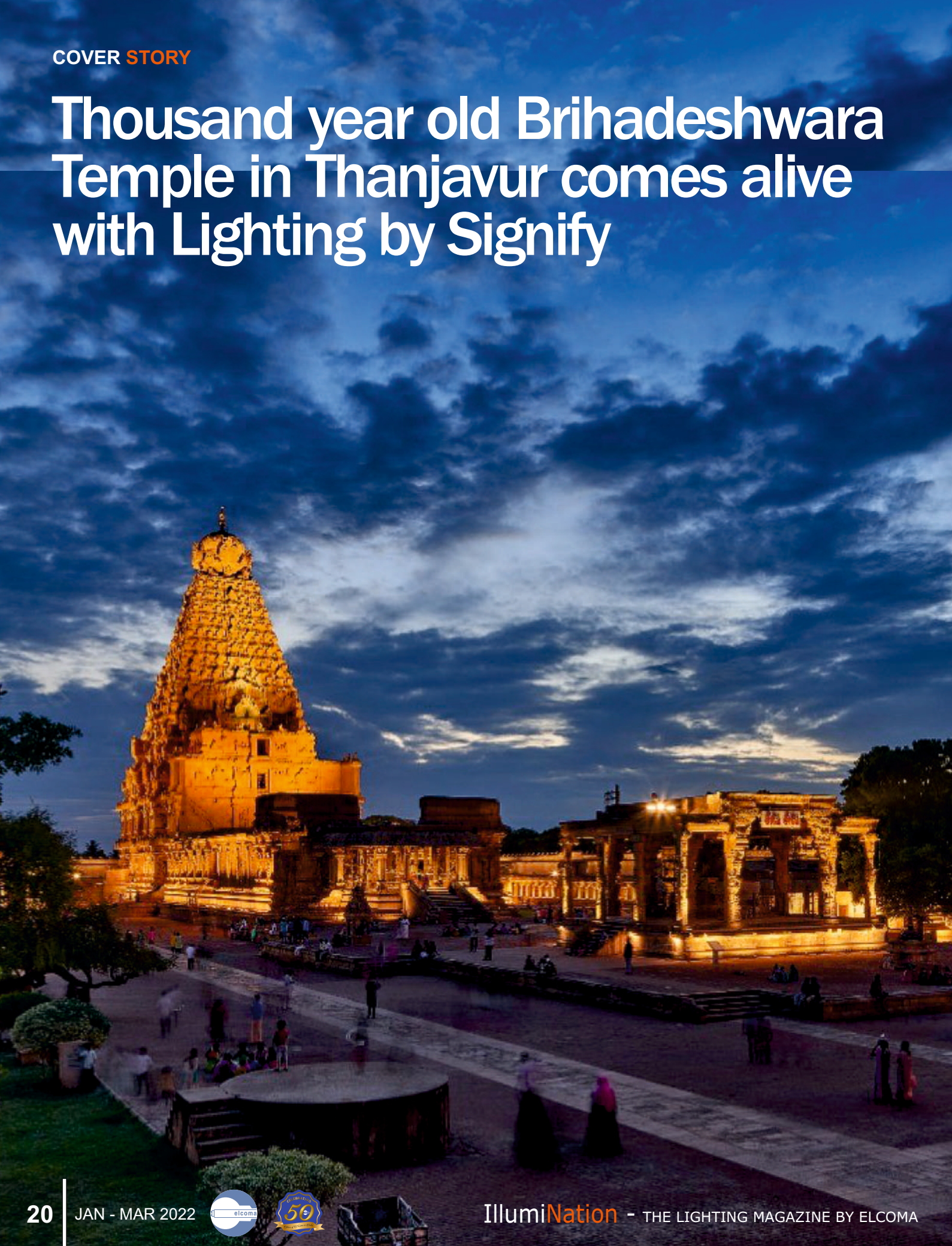
Light is OSRAM

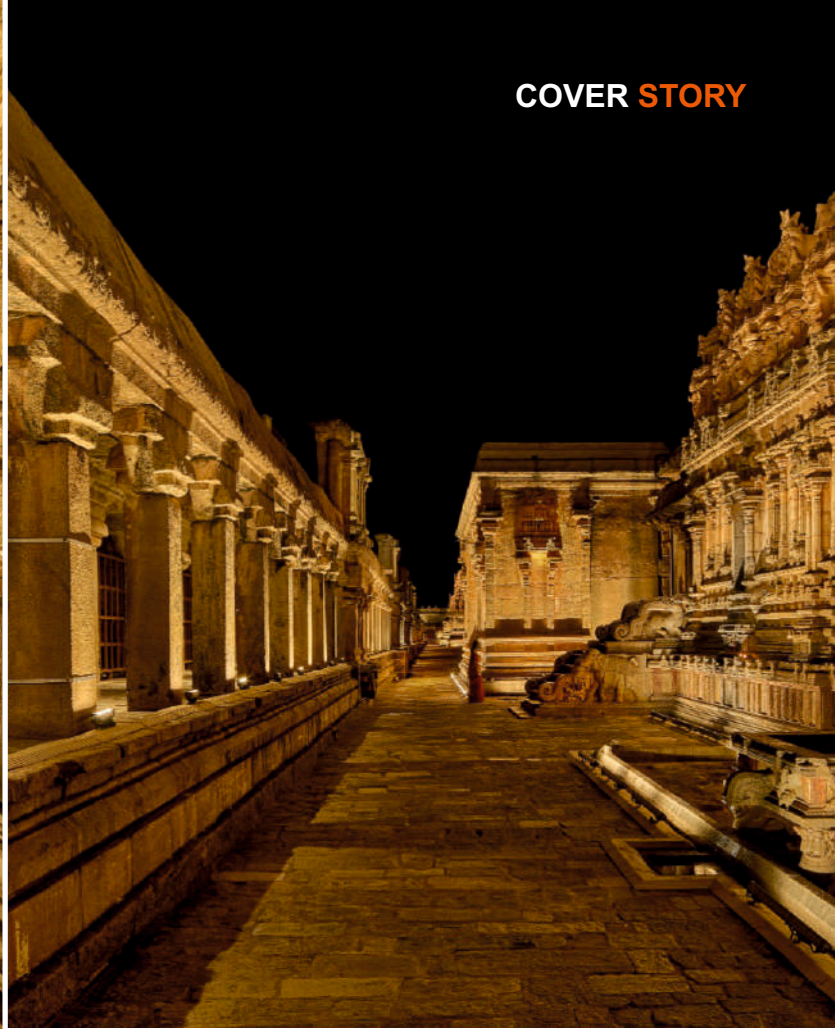
OSRAM



¹ Compared to minimum ECE R112/R37 requirements

Thousand year old Brihadeshwara Temple in Thanjavur comes alive with Lighting by Signify





For millennia, humanity has sought to overcome the technical difficulties of producing light, which was initially worshipped as a divine manifestation. The relationship between humans and light has greatly evolved since 19th century. Following a period of rapid technological advances, the functions of lighting have considerably evolved in the last 20-25 years. Initially used for functional and security purposes, light has become an important tool for celebrating heritage structures.

In comparison to global destinations, India has a storied, ancient and vibrant history of over 5000 years, as a center of civilizational enlightenment and a treasure-trove of art and culture. Given our history of religious, cultural and regional diversity, various peoples of India developed different means of expressing and depicting their ideas, experiences and creative impulses through an exceptionally wide range of

material and methods, including magnificent architecture.

In order to stand out, be unique and build strong identities many heritage structures around the world are being impressively lit in creative and artistic ways. Making these structures dynamic helps them become part of citizens' lives and define their location or city with an impact. It also influences how citizens/tourists respond to a locale and adds an emotional connection to it.

Brihadishwara Temple, is a UNESCO world heritage site of exceptional historical and cultural value. Dedicated to Lord Shiva – in the dancing pose of Nataraja, the mammoth and magnificent architecture that is carved out of 130,000 tons of granite inspires awe and draws respect to the vision and artisanship of 9th century South Indian era. The temple houses a myriad of surprises for everyone visiting this magnificent temple. An important architectural feature of the temple is that the shadow

of the temple never falls on the ground at noon. The architecture of the temple is done so cleverly that the temple casts no shadow on the ground when the sun is at its peak. The Brihadishwara Temple is also the first all-granite temple in the world and the fact that granites are not available within a 100-mile radius of the temple only makes the construction of the temple and its vision even more astonishing.

The temple boasts of plethora of elements to celebrate and reveal. There are intricately carved sculptures, murals and inscriptions celebrating the rich Tamil culture. The temple complex integrates a large pillared and covered veranda (prakara) in its spacious courtyard for circumambulation. The entrance gopurams and Nandi mandapam welcome tourists with elan and awe. The major attraction of the temple is the 216-foot-tall tower that is built above the sanctum of the temple. This flamboyant tower can be seen from

COVER STORY

afar by anyone entering the city. The sanctum is surrounded by massive walls that are divided into levels by sharply cut sculptures and pilasters providing deep bays and recesses. Each side of the sanctuary has a bay with iconography. Various postures of the famous classical dance, Bharatanatyam, are carved carefully on the exterior walls of the upper storey of the temple. The complex has additional smaller shrines as well.

The Project

Lighting a 1000+ year old complex and edifice requires a careful and subtle balanced approach ensuring curated celebration of rich elements and to recreate the grandeur of the temple's daytime vision through artificial lighting. Another important consideration is to keep the luminaires invisible from public view as much as

possible and let the light do the magic. The sculptures, murals and inscriptions are a revelation in the daylight, and artificial lighting has been deployed to cast a light and shadow drama to bring them to life. The temple beams up as a divine tower washed up in rich warm lighting riveting it as new and attractive address for night tourism in Thanjavur. Careful design with outdoor rated, high-quality LED luminaires with precision beam angles and intensity from Color Kinetics by Signify has been deployed to astound and escalate the experience of the mammoth granite structure and compound. The composed dance of light and shadow is dedicated to Lord Shiva and stimulates the Yin and Yang of rich contours by highlighting certain features and concealing others. Special effort has been made to minimize light pollution of any kind.

Project Owner – Archaeological Survey of India, supported by Indian Oil Foundation

Lighting Design Consultants – Sarvdeep Basur, Kunal Gupta, Parveen Kumar for Lucent Worldwide

Luminaires – Color Kinetics (Signify/ Philips Lighting)

Contractor – Amar Electricals, Kunal Choudhary

Photographs – Ar. Harshan Thomson

AUTHOR : ASHISH BAHAL, SIGNIFY INNOVATIONS INDIA LTD.

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers





MINISTRY OF
ELECTRONICS &
INFORMATION TECHNOLOGY
GOVERNMENT OF INDIA



Cabinet Decisions: 15 Dec, 2021

MAKE IN INDIA SEMICONDUCTORS FOR THE WORLD

Scheme for holistic development of
Semiconductor & Display manufacturing
ecosystem



Financial outlay of ₹76,000 crore



Key part of the electronic
supply chain



Trusted supply chain and
secure sources



AatmaNirbhar in semiconductors for
national security, digital sovereignty



Support of up to 50% of the project
cost for setting up Semiconductor &
Display Fabs



Support of up to 30% of capital expenditure
for setting up Compound Semiconductors/
Silicon Photonics/Sensors Fabs and
Semiconductor Packing facilities



Design Linked Incentive (DLI) scheme
of up to 50% of eligible expenditure



Product deployment linked incentive
of 6%-4% on net sale for 5 years



Policy support for:

- Silicon Semiconductors Fabs
- Display Labs
- Compound Semiconductors/
Silicon Photonics/Sensors Fabs
- Semiconductor Packaging
- Semiconductor Design
- Modernization & Commercialization
of Semiconductor Laboratory (SCL),
Mohali



To contribute to US \$1 trillion digital
economy as a part of US \$5 trillion
GDP by 2025 - 2026



Production target worth ₹9.57 lakh
crore over the next 20 years



Exports expected to touch
₹5.15 lakh crore over the next
20 years



India Semiconductor Mission (ISM)
to implement policy roadmap

Indian Government Approves Rs 76,000 Crores for Semiconductor Industry in India

Announcement comes at a time when automakers and tech companies are struggling due to a global semiconductor shortage

The Prime Minister Narendra Modi-chaired Union Cabinet recently approved a production linked incentive (PLI) scheme for semiconductor and display board production in the country. The PLI scheme involves an outlay of ₹ 76,000 crore in semiconductor production over the next 5-6 years. As part of the scheme, the incentives include every part of the supply chain ranging from electronic components, sub-assemblies, to finished goods.

The incentive support of around ₹ 55,392 crore was approved under PLI for large scale electronics manufacturing, PLI for IT hardware, SPECS scheme and modified electronics manufacturing clusters (EMC 2.0) scheme. Additionally, PLI incentives of around ₹ 98,000 crore were approved for allied sectors comprising of ACC battery, auto components, telecom & networking products, solar PV modules and white goods. Overall, the government has committed monetary support of ₹ 2,30,000 crore to position India as a global hub for electronics manufacturing with semiconductors as the foundation.

Telecom and IT Minister Ashwini Vaishnaw said the decision will help design, fabrication, packing, and testing of microchips and develop a complete ecosystem. The scheme aims to provide incentives to companies engaged in silicon semiconductor fabs, display fabs, semiconductor packaging,

semiconductor design, among others.

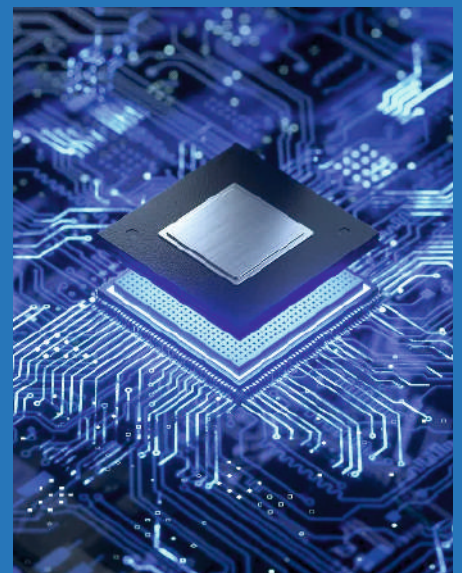
This initiative can be termed as a landmark move, as the government has approved India Semiconductor Mission (ISM) for the development of a sustainable semiconductor and display ecosystem in the country. The program aims to provide attractive incentive support to companies or consortia that are engaged in Silicon Semiconductor Fabs, Display Fabs, Compound Semiconductors or Silicon Photonics and Sensors (including MEMS) Fabs, Semiconductor Packaging and Semiconductor Design.

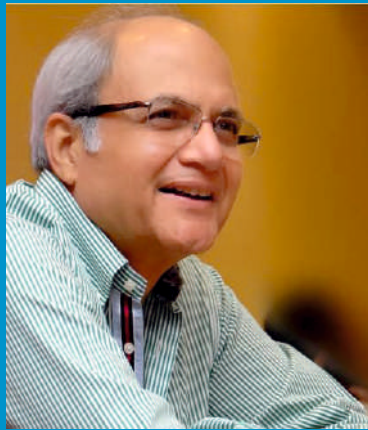
The government has estimated that incentive program will invite investment of Rs 1.7 lakh crore. Israel's Tower Semiconductor, Tata Group, Apple's contract manufacturer Foxconn and a Singapore-based consortium have shown interest in setting up semiconductor fabrication units in India, while the Vedanta Group has also shown interest in setting up a display fabrication plant in India. The government is also hoping to attract players like Intel, Mediatek, Qualcomm, among others and further looking to provide infrastructure support for setting up fabrication facilities.

The recent semiconductor crisis has continued to haunt private electronics products manufacturers, including the LED Lighting Industry. Electronics and Semiconductors have become the most critical component for growth of the economy and all the industry verticals.

ELCOMA members are pleased to see

this program that will also facilitate manufacturing and research on IC Chips, Display Fab, Compound Semiconductors Fab, packaging and Semiconductor products design which will help in creating a vibrant and sustainable ecosystem in India. The Design Linked Incentives (DLI) that provide incentives for product development and product deployment to create Indian IC/chip level products is also a great thought behind this program. The year-long effort by the MeITy team in consultation with Invest India, other ministries, domestic and global industry and academia has resulted in a policy covering all aspects of the industry and has the required depth of understanding of the global ecosystem. The entire country is looking forward to an effective and timely implementation of these policies.





“ I have been involved with most of the efforts for developing semiconductor ecosystem in India for the last 15 years and I sincerely feel that the current policy is most comprehensive effort with deep understanding of the requirements of the industry and is the right way forward to create long-term atma-nirbharta in the field of Semiconductor and Electronics, “ said Dr. Ajai Chowdhry, Founder HCL and Chairman of ESSCI. He further added, " I along with Dr. Satya Gupta who is Advisor- India Electronics and Semiconductor Association, have prepared a plan to design a driver chip for

LEDs for the lighting industry. This is being done as part of our not-for-profit foundation, EPIC. This will not only bring down the cost of the driver but will also provide free availability of an India-centric driver. We have proposed this to ELCOMA.”

**DR AJAI CHOWDHRY,
FOUNDER HCL AND CHAIRMAN OF ESSCI**



“The decision is a significant relief, especially at a time when our industry is dealing with production cuts and price hikes owing to the global chip shortage. The incentive plan will add a much-needed thrust towards manufacturing in India. The immediate next steps would be to create an effective ecosystem for designing, production & consumption of ICs through end products.

The Indian lighting industry is mainly dependent on China for its chips requirement. The manufacturers in China create technology basis the demand and requirements from western markets; development for Indian markets based on the local power supply condition is minimal. Additionally, technology is evolving at a pace that pushes us to develop and adopt newer solutions quickly. Given this context, with the new announcement of setting up chip manufacturing in India, this gap can be reduced and eventually eliminated. The incentive plan will benefit the LED industry by offering cost-effective or feature plus products. We welcome this decision and are optimistic about its implementation.”

**ANUJ PODDAR,
EXECUTIVE DIRECTOR,
BAJAJ ELECTRICALS**



“This is good news for the Industry. A step in the right direction for creating a semiconductor ecosystem in the country. This could help to overcome supply chain challenges and reduce the related business uncertainties in the coming times.”

**AVINDER SINGH,
MANAGING DIRECTOR, OSRAM
LIGHTING PVT. LTD., INDIA,
AMS OSRAM GROUP**



"Commendable decision of the centre to set up a complete ecosystem of semiconductors in the country. Amidst global supply chain issues, such crucial decision will boost our power sector as supply of LEDs, required for several lighting products such as LED battens, lamp, panel as well as solar energy powered products like solar LED luminary and Solar street lights, is facing an all time high demand. This is the starting of a positive cycle for power industry as several production cuts were also being done owing to chip shortages. India's goal to become a manufacturing hub for semiconductors will not only make India self-reliant but also will generate

employment opportunities and become a formidable country for investments from companies worldwide."

**GAUTAM SETH, JOINT MANAGING
DIRECTOR, HPL ELECTRIC & POWER
LTD**

DPIIT Finalizes 16 companies under PLI scheme for LED lights

On 3 November, 2021 DPIIT announced the names of the companies selected under the PLI Scheme for White Goods, the expected investments envisaged creating additional employment and net incremental production.

In pursuance of Prime Minister's clarion call for 'Atmanirbhar Bharat' to bring manufacturing at the center stage and emphasize its significance in driving India's growth and creating jobs, the

Government of India has given approval to introduce the Production-Linked Incentive (PLI) Scheme for 13 key sectors with total outlay of Rs. 1,97,291 crore. Department for Promotion of Industry & Internal Trade (DPIIT) is coordinating the implementation of all PLI Schemes. DPIIT is also the nodal department for the PLI Scheme for White Goods - Air Conditioners and LED lights sector

- with an outlay of Rs. 6,238 crore.

The proposal of DPIIT for the PLI Scheme for White Goods for manufacture of components and sub-assemblies of ACs and LED Lights was approved by the Union Cabinet chaired by Hon'ble Prime Minister on 7 April 2021. The Scheme is to be implemented over a seven year period, from FY2021-22 to FY2028-29 and has an outlay of Rs. 6,238 crore.

The investments in the LED light Scheme will lead to the manufacturing of LED Chip packaging, LED Drivers, LED Engines, LED Light Management Systems, PCBs including metal clad PCBs and Wire wound inductors etc. in high quantities. This is a huge step forward for Atmanirbhar Bharat in important sectors of economy.

PLI Scheme notified by DPIIT on 16 Apr 2021.

Scheme Guidelines published on 04 June 2021.

Modifications to the Scheme Guidelines were issued on 16 Aug 2021.

Applicants given flexibility to choose the gestation period either up to March 2022 or up to March 2023.

Total 52 companies filed applications with committed investment of Rs. 5,858 crore under the PLI scheme.

42 applicants with committed investment of Rs. 4,614 Crore provisionally selected as beneficiaries under the PLI scheme.

Selected applicants include 26 for Air Conditioner manufacturing with committed investments of Rs. 3,898 crore and 16 for LED Lights manufacturing with committed investments of Rs. 716 crore.

6 applicants (3 LED Lights) proposing FDI from countries sharing land border with India have been advised to submit approval for FDI for consideration of approval under the PLI Scheme.

4 applicants (2 LED Lights) are being referred to the Committee of Experts (CoE) for examination and its recommendations

42 Companies Selected under PLI Scheme for White Goods

26 Companies to invest Rs 3,898 crore for Air Conditioner Components

16 Companies to invest Rs 716 crore for LED Component Manufacturing

Investments of around Rs. 4,614 crore envisaged creating additional direct employment of about 44 thousand persons

Expected net incremental production of more than Rs. 81 thousand crore

Applicants provisionally selected under the PLI Scheme for LED Lights

Applicant	Products to be manufactured	Committed Investment (Rs. Crore)
UNIGLOBUS ELECTRICALS & ELECTRONICS PRIVATE LIMITED	1. LED Chip Packaging 2. LED Drivers 3. LED Modules 4. Wire Wound Inductors	125.00
RADHIKA OPTO ELECTRONICS PRIVATE LIMITED	1. LED Drivers 2. LED Engines 3. Printed Circuit Boards (PCB) including Metal Clad PCBs 4. Mechanicals- Housing 5. Wire Wound Inductors 6. Drum Cores 7. Heat Sinks 8. Diffusers	106.50
DIXON TECHNOLOGIES SOLUTIONS PRIVATE LIMITED	1. LED Drivers 2. LED Engines 3. LED Modules 4. Mechanicals- Housing 5. Wire Wound Inductors 6. LED Light Management Systems	100.00
STOVEKRAFT LIMITED	1. LED Chips 2. Printed Circuit Boards (PCB) including Metal Clad PCBs 3. Mechanicals Housing 4. Wire Wound Inductors 5. Diffusers	36.00
COSMO FERRITIES LIMITED	1. Ferrite Cores 2. LED Transformers	33.30
EPITOME COMPONENTS PRIVATE LIMITED	1. Laminate for Printed Circuit Boards (PCBs) and Metal Clad PCBs	31.00
SURYA ROSHNI LIMITED	1. LED Drivers 2. LED Engines 3. LED Modules 4. Printed Circuit Boards (PCB) including Metal Clad PCBs 5. Mechanicals- Housing 6. Drum Cores 7. Heat Sinks 8. Diffusers 9. LED Light Management Systems 10. LED Transformers	25.43
SYSKA LED LIGHTS PRIVATE LIMITED	1. LED Drivers 2. Printed Circuit Boards (PCB) including Metal Clad PCBs 3. Mechanicals- Housing 4. Wire Wound Inductors 5. Heat Sinks 6. Diffusers 7. LED Light Management Systems	150.00
COSMO FILMS LIMITED	1. Metallized film for capacitors	32.01
SORIN TECH PRIVATE LIMITED	1. LED Drivers 2. LED Engines 3. LED Modules 4. Mechanicals- Housing 5. Wire Wound Inductors 6. Drum Cores 7. Heat Sinks 8. Diffuser 9. LED Light Management Systems 10. LED Transformers	13.06
SKYQUAD ELECTRONICS AND APPLIANCES PRIVATE LIMITED	1. LED Drivers 2. LED Modules 3. Mechanicals- Housing	12.00
R K LIGHTING PRIVATE LIMITED	1. LED Drivers 2. LED Engines 3. Mechanicals- Housing Wire Wound Inductors 4. Heat Sinks 5. LED Transformers	11.60
LUKER ELECTRIC TECHNOLOGIES PRIVATE LIMITED	1. LED Drivers 2. Mechanicals- Housing 3. Wire Wound Inductor 4. Drum Cores 5. Diffusers	10.10
CALCOM VISION LIMITED	1. LED Drivers 2. LED Engines	10.00
ORIENT ELECTRIC LIMITED	1. LED Drivers	10.00
SIGNIFY INNOVATIONS INDIA LIMITED	1. LED Drivers 2. Mechanicals- Housing 3. Diffusers	10.00
Total		716.00

Applicants Advised to obtain FDI Approval

Applicant	Committed Investment (Rs. Crore)
CHENFENG TECH PRIVATE LIMITED	100.00
HALONIX TECHNOLOGIES PRIVATE LIMITED	13.05
FULHAM (INDIA) PRIVATE LIMITED	11.00

Applicants referred to the Committee of Experts (CoE)

Applicant	Committed Investment (Rs. Crore)
ADSUN LIGHTING	22.50
INVENTRONICS SSL INDIA	10.00

Motorist's Safety is the Utmost Priority – An approach to Tunnel Lighting

The challenges in Lighting Design for Tunnels

Tunnel Lighting is a complex and demanding field that is very challenging subject where the application is semi-indoor but at the same time has to cater to requirements for outdoor applications.

Light varies in intensity and direction during different hours of the day and therefore has a profound effect on applications like Tunnel Lighting. The variation in intensity changes the brightness of the perceived environment which primarily affects the Visual Performance of a Motorist while approaching, entering and leaving the

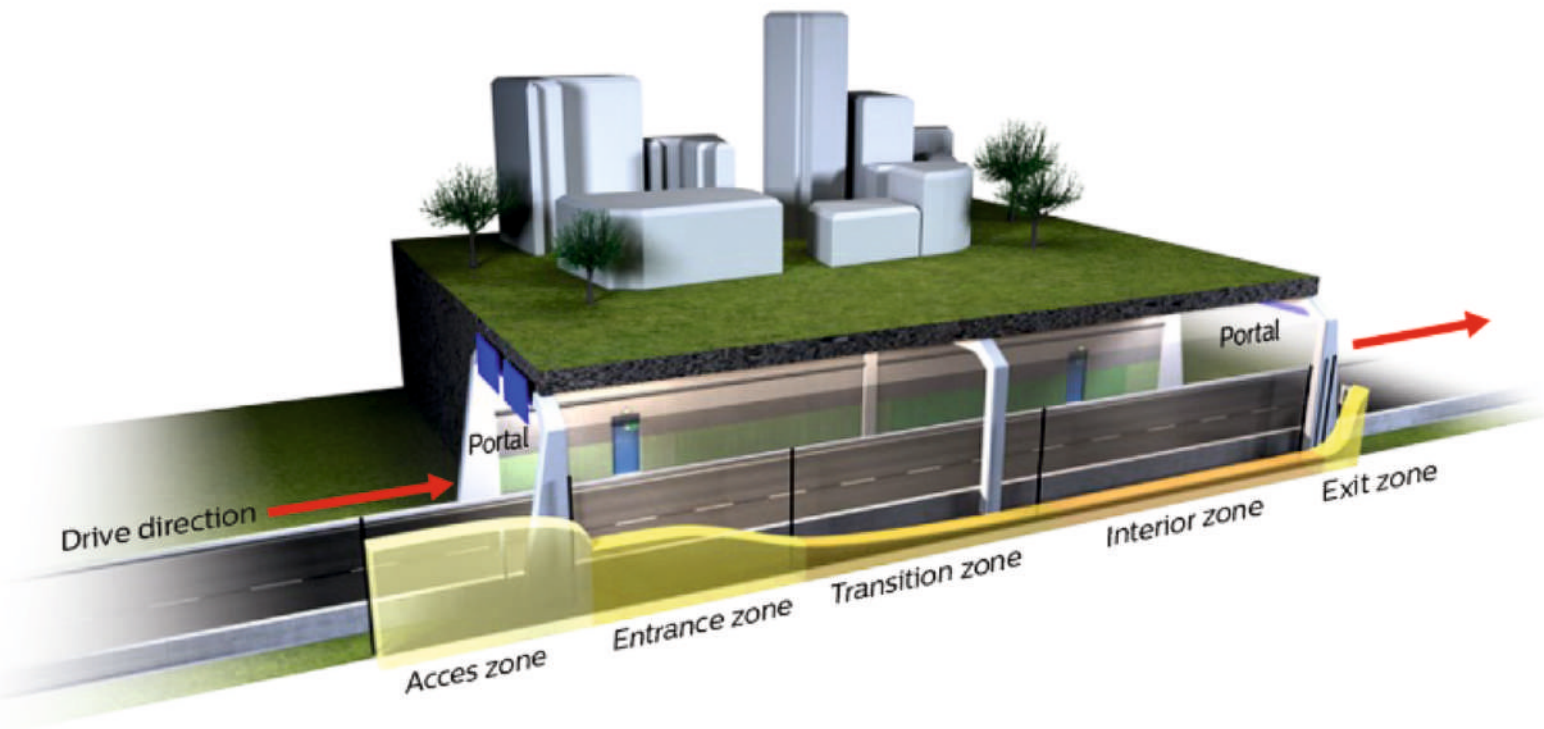
tunnel.

The objective of tunnel lighting is to ensure that traffic, both driving day and night, can approach, pass through and leave a tunnel at the appropriate speed with the same degree of safety and comfort as on an open road. Not only is the lighting performance key for the safety and comfort of road users, but maintenance of the lighting system is also critical due to the physical constraints of tunnels and problems of limited access.

Tunnel lighting is a special and extremely interesting lighting

application mainly due to

- a) Illumination of the tunnel at night-time is not the only challenge. Daytime illumination is even more critical since sufficient lighting level at the entrance / beginning of the tunnel is extremely important for the safe entry and smooth passage of motorists through the tunnel for a safe drive.
- b) Despite the tunnel being an enclosed area, it cannot be considered an indoor application and therefore the lighting designer needs to provide lighting equipment suitable for outdoor environment.



A driver's sense of safety and comfort should be kept intact while entering and driving through the tunnel by providing 'Quality' lighting in a tunnel, both during the day and at night. Light quality should not be lower or diminished compared to what the driver experiences on an open road. Motorists should have adequate lighting to discern information concerning the course of the road ahead (visual guidance), the behaviour of other road users, and the presence of any obstacles on the road surface.

The lighting requirements for tunnels are totally different from "normal" outdoor lighting since we require low levels of light during the night and very high levels of lighting during the daytime.

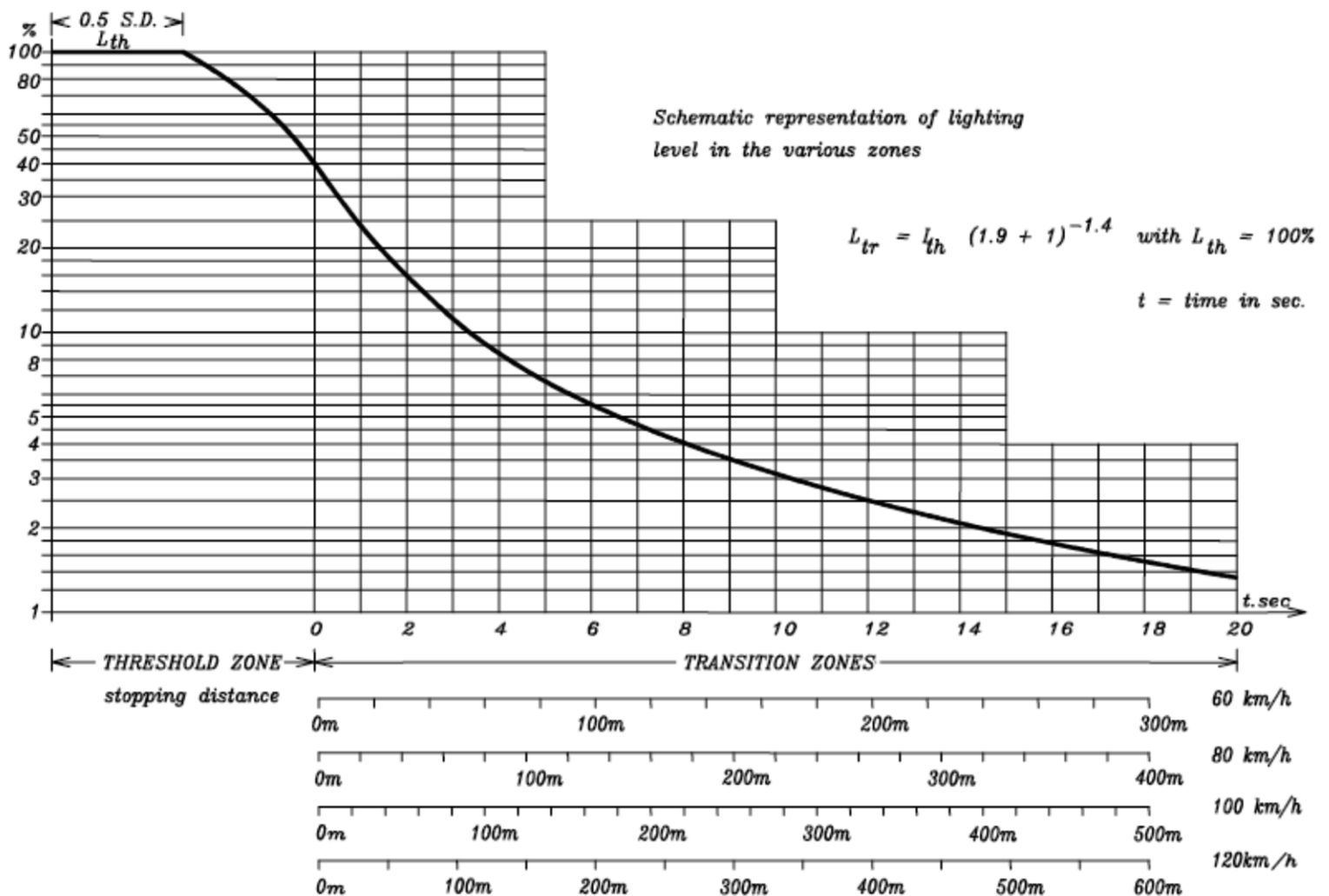
The principal characteristics required to describe the quality of tunnel lighting are:

- the luminance levels of the road surface ($L_r - Cd/m^2$)
- the luminance level of the walls up to 2 m in height above the road surface. ($L_w - Cd/m^2$)
- the evolution of Luminance along the Tunnel
- the uniformity of the luminance distribution on the road and walls. Uo ad UI
- the ratio of luminance on road and luminance on walls
- the control of induced glare (T_i)

- the avoidance of critical flicker frequencies

Defining Requirements

The design of the lighting during daytime is particularly critical because of the human visual system. Human eye cannot simultaneously perceive the details on 'highly lit roads' in daytime and 'relatively dark interior' of the tunnels. Our eyes are subjected to bright environment on the roads and surrounding areas in the visual field. As a result, while entering a tunnel, the human visual system takes certain time to adapt to the difference in the lighting levels which makes it very difficult for the human eye to see any object in the



dark tunnel while entering. It takes good amount of time for the human eye to adjust to the dark environment in the tunnel. The time taken for adaptation is higher if the difference in the light outside and inside the tunnel is more. Hence it is important to provide sufficient amount of 'luminance' level in the tunnel.

Secondly, the distance travelled by the motorist while entering the tunnel depends on the speed of the vehicle. This means that for a particular speed, if the difference between the lighting level outside and that inside the tunnel is more, the driver's visual system would take more time to adapt and would travel longer distance in the tunnel.

Zones and Associated Vision Problems

In order to work out proper lighting system, long tunnels are divided lengthwise into five zones.

The Lighting in these different zones is extremely important. Luminance levels in a) Threshold (or Entrance) Zone and b) Interior zone is defined for the tunnel. The difference in the luminance level is strategically reduced from the Threshold Zone to Interior Zone following the 'Luminance Evolution Curve' in the Transition Zone and the luminance level is again increased in the 'Exit Zone'.

During the day our eyes will be adapted to the relatively high luminance outside the tunnel and inadequately lighted tunnel entrance may be seen as a "black hole", in which no details are visible. Illumination is provided to eliminate this effect and at the same time get our eyes adapted progressively to interior luminance.

Our eyes take time to adjust to the varying levels of Luminance. Transition from the Highest level of Luminance to the Lowest level needs to be done gradually and it is expressed by the formula

$$L_{tr} = L_{th} (1.9 + t)^{-14}$$

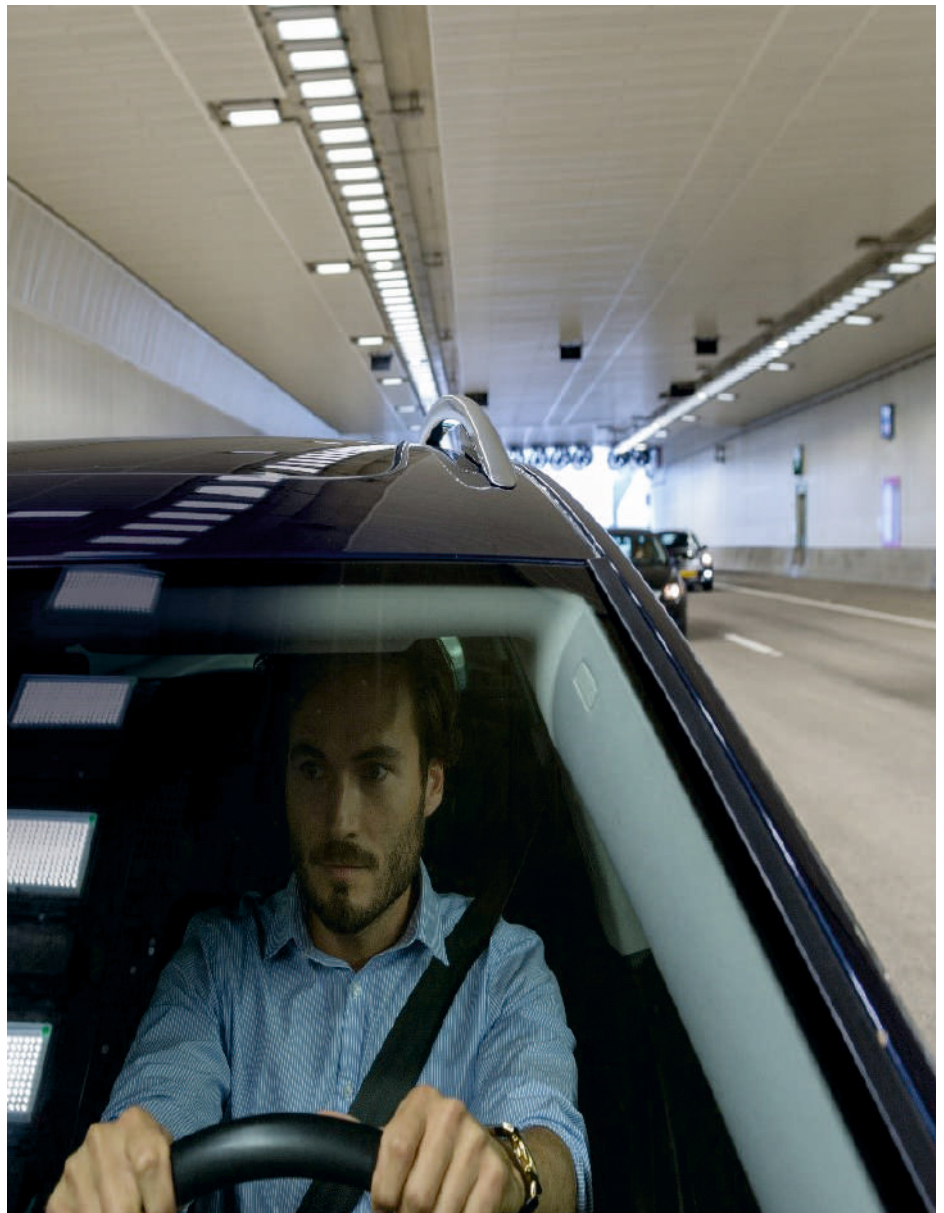
This transition from top level of luminance to lowest level should follow the Luminance Evolution Curve

Our world is changing, so the needs. The environments that we live in are growing at an unprecedented rate. We have observed phenomenal rate of developing the infrastructure in different terrains as well as in the cities. Large, heavily populated cities will become evermore reliant on underground travel to improve infrastructure, logistics and free up valuable space. This in turn will bring its own demands in terms of tunnel lighting, safety, and driver comfort.

Demand for new white light solutions that improve visibility, reduce accidents, and prevent costly roadblocks will be what every stakeholder would look forward to. With rising concerns over the costs, availability and environmental impact of high energy consumption, tunnel lighting solutions that use less power and result in fewer carbon emissions will be the need of the hour.

**AUTHORS : SHREEKANT PHANSE,
NATIONAL APPLICATION SPECIALIST,
SIGNIFY INNOVATIONS INDIA LTD**

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers



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Together, improving life



Poised for Growth

Anuj Poddar, Executive Director, Bajaj Electricals says that their company has bounced back and ready for double-digit growth



The second wave of COVID-19 has been severe. What has been the impact of this COVID-19 pandemic on your organization?

The second wave of COVID-19 was an unprecedented scenario, to say the least, that caused disruptions on multiple fronts. I believe no sector was immune to its impending impact, including ours. Just when the industry had begun understanding how to work around the obstacles, the authorities imposed a new set of restrictions and lockdown once again. This made it difficult for manufacturers to create inventories and logistics partners to deliver them to retailers and eventually to consumers, especially during the crucial pre-festive season. However, the industry has learnt and grown from then, and we have pulled off a quick bounce back.

How is your organisation preparing it to overcome the impact caused by the COVID-19 pandemic?

The past 18 months have been challenging, and it has also reiterated the importance of being humane and pragmatic to tide over difficult times. It is imperative for organisations today to become more strategic in handling businesses digitally and engaging with prime stakeholders. At Bajaj Electricals, our top priority has been to ensure the well-being of all our partners and employees. To cope with the evolving scenario, we have equipped staff to work in a remote setup. As a people-centric organisation, we continue to engage with staff on the latest health and travel protocols. We have also organised vaccination camps for employees, their families and our vendors. Slowly we have also resumed operations in some of our office locations, fully following guidelines laid out by the authorities. All these measures have helped us to maintain a workflow with minimal interruptions.

Given disturbance to the overall business, how do you think the Indian Lighting industry will look like in the future?

With increased urbanisation and rural electrification, the lighting industry in India is poised for an upward trajectory.

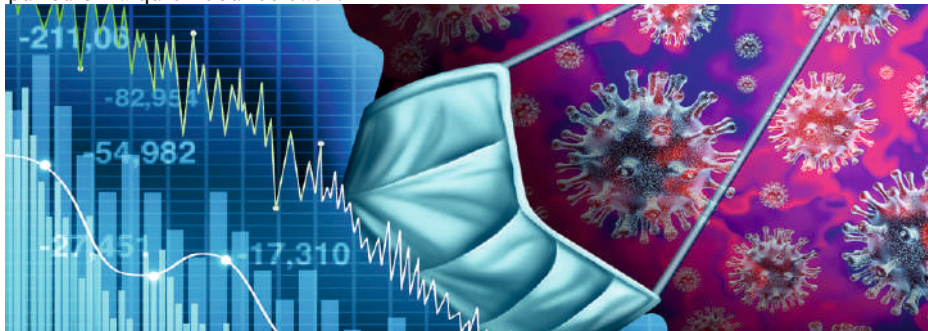
This growth will be further aided by the demand for energy-saving and innovative products from consumers. With the internet's penetration, the demand for high-end smart LED lighting devices controlled through voice and mobile applications will continue, especially in urban cities. The quality levels and product duplicates coming from the unorganised section of this industry have been persistent issues in the sector. All major players and industry bodies have to address this so that we don't lose the momentum.

The COVID-19 pandemic has undoubtedly impacted product pricing. How have you been able to manage the market and face the competition?

Owing to the higher prices of the raw materials, the costs of electrical appliances will see a hike for some time at least. Our strategy has been to meet the demands of the consumers by offering more value-added and technologically advanced products with easy accessibility. Simultaneously, we are increasing our inventory in online and offline channels to cater to all segments of buyers.

There has been a de-growth in 2020-21 in the lighting industry across the world. Do you expect a turnaround? If yes, what are your growth estimates in the current fiscal?

With the relaxing of COVID-19 related norms and demand in the market, we expect a turnaround in the current year. Given the re-opening of commercial spaces, public transport and gradually entertainment spaces, educational institutions, we estimate a double digit growth in this fiscal.



Festive Season Sales are Back to Normal

Mr. Nirupam Sahay, ED & CEO, Lighting and Consumer Durables, Surya Roshni, believes that the Industry is going to bounce back strongly



What has been the impact of this COVID-19 pandemic to your industry?

The Lighting industry, like all other industries, was impacted badly by the first and second waves of COVID, and the subsequent lockdowns across the country. Fortunately, there has been an upturn over the last few months, and festive season sales are back to near

normal.

How is your organization preparing to overcome the impact caused by the COVID-19 pandemic?

Surya Roshni used the lockdown period to work on productivity improvement projects, carry out training for the Sales and other teams, and increased efforts to build the brand. All of these are paying off well.

In view of disturbance to the overall business, how do you think the Indian Lighting industry will look like in the future?

The Indian Lighting industry has seen a lot of ups and downs over the years, but has always bounced back strongly. I am very confident that the industry will continue to innovate, drive down prices for the consumer, and move to more Smart Lighting. The industry's future is

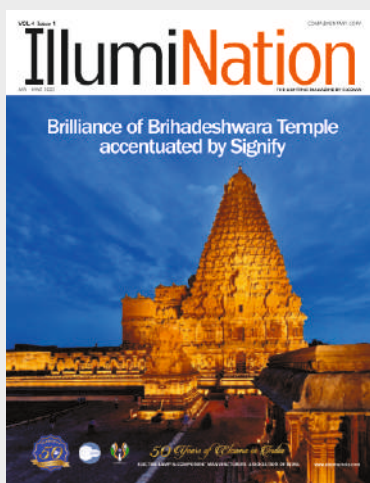
bright.

The COVID-19 pandemic has surely impacted the product pricing. How have you been able to manage the market and face the competition?

Surya has remained focused on innovation and productivity improvement. There have been continuous increases in the costs of raw material, freight etc. – we have increased prices to mitigate the impact and continued our efforts on automation and value engineering.

There has been a de-growth in 2020-21 in the lighting industry across the world. Do you expect a turnaround?

The growth in the Lighting industry is bouncing back. I expect a growth in the high single digits in this fiscal year, despite the negative COVID impact, particularly in April-June.



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Signify Supports Visually Impaired Cyclist spread the message of road safety



Ajay Lalwani, a visually impaired cyclist, is embarking on a 7,500 kms journey across India to raise awareness about road safety and the need for adequate lighting on our country's roads. He will begin his journey from Gateway of India, Mumbai, and will travel twice across the length of the country to Srinagar, Kanyakumari and back to Mumbai, cycling through 12 states over a course of 45 days. His mission is supported by Signify (Previously known as Philips Lighting).

Ajay is a 25-year-old, visually impaired cyclist who has previously set two world

records in blind cycling from Mumbai-Goa-Mumbai and Dadar-Gondia-Dadar. He has also won several medals at national level para-sports tournaments in Judo and Kabaddi.

Ahead of the journey, Ajay Lalwani said, "Every year thousands of lives in our country are lost to road accidents and with this initiative I hope to create awareness about the importance of road safety through proper lighting on roads. I am delighted that Signify is supporting me in this mission and I hope to fulfill my dream at the end of these 45 days."

On the occasion, Sumit Padmakar Joshi, CEO & MD, Signify Innovations South

Asia, said, "We, at Signify, salute Ajay's commitment as he embarks on this ambitious journey across the country to create awareness about road safety. Adequate illumination on streets can play a huge role in enhancing road safety and reducing accidents. Together with Ajay, we hope to draw the country's attention towards this cause and pave the way for safer roads in our country in the future. He is an inspiration for all of us, and we wish him the very best for his journey."

AUTHOR : SIGNIFY INNOVATIONS INDIA LIMITED

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Philips **HexaStyle Downlights**



New hexagonal design



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innovation  you



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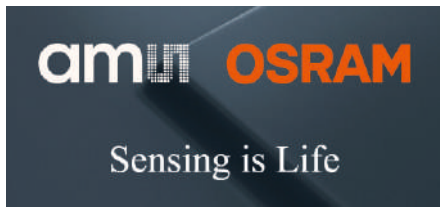
Natural White



Cool White



ams OSRAM – it's better than ever



The ams brand has a strong image and is seen as exciting, smart and represents competitive edge and momentum. OSRAM is an iconic, globally recognized and a long-established brand, representing a team of highly trusted, deep experts who are strongly customer centric.



“Two technology powerhouse companies with over 110 years of history have integrated with a vision to “Create the uncontested leader in optical solutions.”

AMY FLECHER,
VICE PRESIDENT-CORPORATE
COMMUNICATIONS AND
MARKETING, AMS OSRAM

In March 2021 ams and OSRAM began to operate as a combined company. Around 26,000 talented employees worldwide began to focus on innovation across sensing, illumination and visualization to make journeys safer,

medical diagnosis more effective and daily moments a richer experience. Together, ams OSRAM expects to position itself as a customer-centric, high-tech innovator drawing on the strength of each respective brand. As global company with the ability to serve the full optical value chain – from emitters to sensors, from optics to algorithms - a perfect balance is created to display how the combined company will focus on advancing technologies.

Either globally or in group of countries OSRAM has been securing leading positions in many verticals like automotive lighting, event lighting, UV-C purification lighting, film/ TV shooting lighting etc. With the integration of ams OSRAM, the brand has now a broader portfolio of products, technologies and applications.

ams OSRAM creates exciting innovations that enable their customers in the consumer, automotive, healthcare and industrial technology sectors maintain their competitive edge. They develop complete optical high-tech solutions their customers seek, while envisioning and realizing new possibilities.

Technology wise, ams OSRAM offers exciting products and solutions like VCSEL-portfolio for 3D gesture recognition, biosensors for vital sign monitoring in smartwatches as well as spectral sensors for lateral flow testing and point-of-care diagnostics. ams OSRAM products include UV-C LED

with sensors that can safely disinfect areas by destroying harmful viruses and bacteria while detecting human presence, NanEye – the world's smallest digital camera which can be used in medical and consumer applications and horticulture sensors that enable spectral balancing of LEDs and daylight harvesting to assure an optimal yield and support energy and cost savings.

By adding intelligence to light and passion to innovation, ams OSRAM aims to enrich people's lives.



“As ams OSRAM, we create a global leader in optical solutions by providing international industrial capacity in sensor and light technologies at the transformative edge.”

AVINDER SINGH
MANAGING DIRECTOR, OSRAM
LIGHTING
PVT. LTD., INDIA
AMS OSRAM GROUP

AUTHOR : OSRAM LIGHTING PVT. LTD

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Solar lighting – Light from Light

A look at how solar energy can change our world

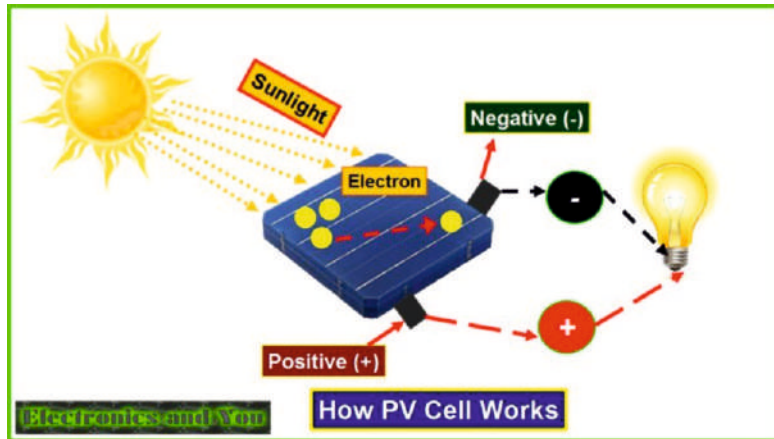


Fig. 1 Working of a Solar photovoltaic (PV) cell

The consumption and demand of energy is escalating day by day with rising population of the world. Available resources for generating energy are limited and majority of them cause pollution to the environment. Therefore, from last few decades researchers are going on at a rapid pace for finding solution for renewable and pollution free sources for generation of energy. Among all renewable and non-renewable sources of energy, sunlight is the most preferable renewable source of energy. Generation of thermal energy using sunlight is well known for several decades but the production of electrical energy using solar cells has also progressed significantly only during the last decade or so. Sunlight is the perpetual source of energy naturally available during daytime on the earth. Around 1.05×10^5 TW power of sunlight is received on earth surface continuously after 60 % transmission from atmospheric cloud cover. By the year 2050 solar power is expected to become the world's largest source of electricity as the total global energy needs are expected to be approximately 25-30 TW. Therefore, only a small portion of available solar irradiance on the earth's surface is

sufficient to fulfill the energy demand of entire world despite the fact that utilization of solar energy over entire earth surface for energy harvesting is not practical since the demand of energy production is partially fulfilled by other renewable and non-renewable sources as well.

In his inaugural address to the COP 26 Summit, at Glasgow on November 2, 2021, the Hon'ble Prime Minister of India Sri Narendra Modi called upon the world leaders to harnessing solar energy with the concept of "One Sun, One World and One Grid". He said, "This concept would substantiate the world need for welfare of humans especially electrifying and lighting the houses of the poor around the globe." Lighting consumes a major portion of the energy globally, in general. About 18% of the energy production in India is consumed in lighting. Therefore, harnessing solar energy, especially the visible part of the electromagnetic spectrum called light that emanates from the Sun and to convert this energy into light using a hybrid of the solar voltaic cell, called Solar PV, with LEDs is the need of the day. The PV stores the energy by charging itself through electric current created by electron flow between the

layers of silicon cells (as in Fig.1) and the LED uses the electric potential of the PV to produce light due to the electric current flowing through the LED. Hence solar lighting can be termed as 'light from light'.

Now solar PV has evolved from small-scale applications towards becoming a mainstream electricity source. Solar panels on the roof with correct orientation or angle of inclination are installed to take advantage of the sun's energy.

Solar powered lighting installations do not require the complicated infrastructure and do away with trenching and wiring expenses necessary for electrical connections. Not only are long-term maintenance, operational costs reduced but solar panels are easy to clean including the electronic components, LED luminaires and recyclable batteries. As solar lighting systems do not need to be connected to the electrical grid, the installation of such system requires minimal physical disturbances. Therefore solar lighting is ideal for parks, playgrounds, environmentally-fragile land and also in achieving green building electrification. Solar power generated by using the natural light is an emission-free, minimally invasive and reduces light pollution. It is an infinitely renewable resource of energy that helps in reducing the carbon footprint and prevent further global warming.

When designing sustainable buildings, architects that want to minimize the amount of energy used by these buildings for lighting have to incorporate solar design into architecture with inclusion of either passive or active solar design systems or sometimes both. Solar power is less susceptible to

changing energy prices providing for future savings compared to other power sources. In the face of a natural disasters or other loss of power, solar lighting is a much more reliable source of light. Paired with LED lights, solar is practical for areas requiring illumination for personal safety and remote sections of a property. Solar lighting is also ideal for construction sites, security backup areas where underground wiring is needed temporarily.

Installation of off-grid solar lighting systems is quick and easy, requiring minimal tools and equipment. Solar lighting projects can be completed in days without any need for specialized electrical or electronic engineers for installing traditional electrical wiring. Solar lighting is an increasingly attractive option when it comes to servicing construction sites, powering remote areas and increasing personal safety at night. Solar lighting also helps combating rising electricity rates as this technology is flexible, environmentally friendly and affordable. With so many advantages and benefits of the off-grid solar lighting systems, there is an urgent need for greater research in solar lighting systems especially in solar powered LED street lighting systems as these systems do not consume huge power unlike conventional street lighting systems.

The most efficient commercially available LED lamps and commercially available LED chips have efficiencies of 200 lumens per watt (lm/W) and over 220 lm/W respectively. Each single LED photodiode is powered by direct current (DC) while mains current is alternating current (AC) and usually at much higher voltage than the LED can function. In order to run LED lighting on solar systems, the solar PVs are used to charge batteries to 12V which are then converted to 120 V AC by means of inverters and are connected directly to a dedicated circuit breaker in the electrical

panel.

A basic solar-powered LED streetlight system consists of a solar panel, a LED lighting fixture, rechargeable battery, controller and a pole. Usually such systems controlling the electric parameters of the LED lamp by a control circuit using sensors such as light dependent resistor (LDR).

The most important factor when designing a solar PV system is to find out the total power and energy consumption of all loads by calculating total Watt-hours per day for each appliance used and calculating total Watt-hours per day needed from the PV modules while compensating for the loss of Watt-hours per daytime in the PV, which might be approximately 30%. The peak Wattage (Wp) produced depends on size of the PV module and climate at the site, therefore the size calculations must involve the total Watt-peak rating needed for PV modules and the number of PV panels for the system. The size of the PV module could be calculated as $\text{Number of Watts of Load/Inverter Performance Efficiency}$.

An inverter is used in the system where AC power output is needed and the PV size depends on the inverter performance efficiency. Therefore the input rating of the inverter should never be lower than the total watt of appliances. Rather the inverter size should be 25-30% bigger than total Watts of appliances. For grid connected systems, the input rating of the inverter should be same as PV array rating to

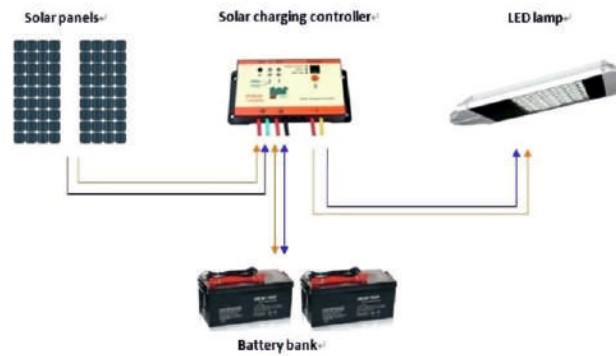


Fig. 2 Solar LED Streetlights

allow for safe and efficient operation.

Deep cycle battery for discharge to low energy level would help calculate the size of the battery which could be calculated, E.g. $\text{battery size} = \text{total LED lamp current} \times \text{operating hours}$. A solar charge controller is needed to handle the PV arrays and to prevent the PV from overcharging and reverse flow of charge during night when no charging takes place.

Strong research and development of renewable energy, focused on inventing and designing the prototypes using solar energy for PVs for solar lighting (indoor and street) is the need of the day for a country like India where solar power is like a boon available almost whole year. Modern LED lighting solutions advancing rapidly are capable of delivering significant energy saving potentials. Employing high efficacy LED chips, optimizing luminaire design and flexible lighting control would enable enhanced performance at lower cost for different lighting namely indoor, street and for different traffic conditions. Street Light Control Systems can save a great amount of electricity supporting implementation of LED lighting systems compared to streetlamps that are kept lighted during nights.

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Dr. Abhilasha Gaur appointed as the new COO of ESSCI



The Electronics Sector Skills Council of India (ESSCI), an organization setup to provide a skilled workforce for the electronics industry, has appointed Dr. Abhilasha Gaur as its new Chief Operating Officer (COO). Dr. Abhilasha is an accomplished professional with vast experience in the Skill Development ecosystem. She would be responsible for overseeing the operations of ESSCI and will work closely with its Governing Council on strategic issues related to the growth of the Electronic Systems Design and Manufacturing (ESDM) industry in India.

Dr. Abhilasha Gaur is an experienced core management practitioner with 18 years of experience in Business Development, Execution of Government Projects and Implementation of various initiatives in Skill development, Corporate and academics. She brings with her an excellent combination of domain knowledge, and operational experience.

ESSCI is a strong contributor to fulfilling the skilling needs of the vibrant ESDM sector in India. It works closely with industry, the National Skill Development Corporation (NSDC) and the Ministry of Skill Development, and Ministry of Electronics and IT (MeitY) to provide both skilling and re-skilling services to the industry. Over the years, ESSCI has successfully skilled over a million professionals for the ESDM industry and have a wide footprint across India.

Commenting on her new role, Dr.

Abhilasha Gaur said: “The government of India is focusing on design and manufacturing electronics hardware within India, which seems to be the conceptual origin for both the Make in India and the Digital India programs. These initiatives encourage domestic manufacturing and exports across the electronics system design and manufacturing (ESDM) value chain, aiming to achieve a market size of US\$ 251 billion by 2023. ESSCI will play an important role to fulfil the demand of skilled workforce for the same. I am fortunate and excited for this opportunity to work with the industry leaders and policymakers in the ESSCI Governing Council, and hope to significantly contribute to this national cause with their guidance and leadership.”

We welcome Dr. Abhilasha Gaur on board and wish her the best as she assumes this important mantle.

Radhika Jha appointed as CEO of EESL



Radhika Jha, Indian Administrative Service cadre 2002, has been appointed as the Chief Executive Officer in state-run Energy Efficiency Services (EESL). EESL is a joint venture between NTPC, Power Grid, Power Finance Corp and REC, working to promote energy

efficiency in the country.

Jha, a 2002 Uttarakhand IAS, spearheaded the Centre's Integrated Power Development Scheme as executive director in Power Finance Corp, before moving to the state. In July, Jha had taken over as the secretary of the education department, Uttarakhand. Where she navigated the operational guidelines for resuming classes post COVID and formulated a detailed strategy to cover up for the learning loss. Prior to that, she was the Secretary to the

CM of Uttarakhand from 2017 to 2021 where she assisted the Chief Minister of Uttarakhand on all executive and legislative matters. She was also responsible for monitoring the developmental progress of the state and coordinated with various Ministries/stakeholders on behalf of the Chief Minister's office. She completed her Bachelors in Psychology & Economics from Lady Shri Ram College for Women, Delhi University in 1998 and Masters in Psychology from the Delhi University in 2000.

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Orient Electric Bags the National Energy Conservation Award 2021



Orient Electric Limited recently bagged the prestigious National Energy Conservation Award 2021 under the category “Most Energy Efficient Appliance of The Year - LED BULB” for its 9W Self Ballasted LED Bulb, that saves upto 90% energy in comparison to a traditional bulb.

These prestigious awards instituted by the Bureau of Energy Efficiency (BEE), a statutory body under the ministry of Power, Government of India, identifies and recognizes prominent achievements

in energy conservation. The award was presented by Sri R K Singh, Union Minister of Power and NRE, at a mega event held on 14th Dec-2021, at Vigyan Bhawan, New Delhi.

Commenting on the award, Mr Puneet Dhawan, Executive VP, Orient Electric Ltd said “We are thankful to the Bureau of Energy Efficiency and Ministry of Power for selecting our product as 'The most energy efficient appliance of the year 2021' under the category of LED Bulb. This recognition serves as a

testimony to our manufacturing and design capabilities and our commitment to the cause of energy conservation by providing energy efficient product to consumers. We honoured to receive this award”

ELCOMA congratulates Team Orient Electric for this award.

MR PUNEET DHAWAN, EXECUTIVE VP, ORIENT ELECTRIC LTD RECEIVING THE AWARD FROM SRI R K SINGH, UNION MINISTER OF POWER AND NRE

Lightroniks International Announced in Aug 2022

Aiming to bringing about a change in the field of Expos for the industry, Vaarta Trade Fairs India, announced the inaugural edition of Lightroniks International, slated for Aug, 2022 at Pragati Maidan, New Delhi. The event is expected to be a global expo with that provides an integrated platform to the Lighting and Electronics Industry.

Numerous exhibitors from electronics, lighting, electronic components, machinery, accessories and suppliers/manufacturers of raw materials

have already confirmed their participation.

With the trend shifting towards energy efficient products and the government taking meticulous steps in encouraging R&D as well as capital investment in efficient lighting technologies across various industrial, commercial and residential sectors, the organizers expect that this event will be the perfect podium for exploring new ventures and forming long term associations along with generating unmatched opportunities for

manufacturing and trading in India.

Mr. Rajesh Chandra, Business Leader at Vaarta Trade Fairs said that “The concept of a single platform for both lighting and electronics industry is being welcomed by all segments of the industry. The initial response is very encouraging.” Mr. Deepak Bohra, Head of Projects at Vaarta Trade Fairs said that “It will be India's largest congregation of industry personnel from all sectors. A one stop solution to all your B2B promotional needs.”

Luker launches Alcor Narrow Beam LED Luminaires

Luker launches ALCOR Narrow Beam LED Luminaires suitable for long-distance projections of light. Available in wide range of colors like Amber, Green, White, Warm White and Blue, these are well suited for highlighting building facades, high-rise building and monuments.

These highly efficient Ip65 LED luminaires comes with advanced OPTICS and high power LED to ensure long-distance uniform light output.

The simple and easy installation brackets along with Angular adjustment gives flexibility of usage for lighting designers and users.



Havells Launches Endura Pearl Grand Street Lighting Luminaire and Freedom Linear Luminaire



Endura Pearl Grand smart Street Light is first of its kind innovative having the ability of color tunability, a feature which can be used for special instances or for catering to seasonal variation of ambient light. Reliability is unmatched with the LEDs having an extraordinarily long burning life as compared to conventional product. The design focuses on modularity and future proofing in terms of optical beam geometries so that different kinds of street applications such as Cat A1, Cat

A2 and Cat specific to NHAI can be illuminated by the same product. The product is IoT enabled which makes it possible to have bidirectional communication with cloud and thus enabling features like remote control and monitoring, scheduled switch on/off and dimming. The product also has advanced features like health monitoring and predictive maintenance in order to drastically reduce downtimes in field.

Havells Freedom comes with a premium and sophisticated design language. The simple form factor makes it compatible with different office and retail spaces. The modular and flexible design approach gives freedom to architects in expressing their

imagination with free-flowing design forms. The elements can be indexed in steps of 15° with maximum possible orientation being 45°. This feature breaks the monotony of pre-set factory-made designs allowing onsite design configurations as per architect's desire. The design also features color tunability and is compatible with Havells Human Centric Lighting and IoT Architecture.



Signify launches Philips HexaStyle, India's first hexagon-shaped LED downlight

Signify recently launched its Philips HexaStyle LED downlight in India. It is a unique, first-of-its-kind hexagonal shaped downlight that can be arranged in different patterns to create unique designs in the ceiling. These downlights are built with a round fitment, making them easy to install in regular round-shaped cut-outs in the ceiling.

The downlight offers high energy efficiency of 100 lumens per watt and is available in both warm white and cool white options and three wattages - 8W, 12W and 15W. It also features Signify's EyeComfort Technology which is designed to be easy on the eyes.

Currently, downlights are only available in 2 shapes - round or square and are installed as single units offering functional and ambient lighting. The Philips HexaStyle downlight can be

arranged in unique patterns which is redefining the usage of downlights as a design element as well, in addition to offering just functional and ambient lighting. Customers can use their imagination to create unlimited designs in their ceiling by placing the hexagonal shaped downlights in different configurations.

Sumit Joshi, CEO and Managing Director, Signify Innovations India said, "We are proud to introduce our latest innovation – the Philips HexaStyle downlight in India. Its hexagonal shape will enable consumers to express their creativity and design a truly personalized lighting experience for their home, by creating unique patterns in their ceilings. With this innovative product, we have expanded



the product functionality from only illumination to illumination and design as well."

Orient Electric launches Rainbow LED Downlighters

In the series of Rainbow products, Orient Electric has launched 2 more products called Rainbow Recess Downlighter and Rainbow Surface Downlighter in 6W. Orient Electric is one of the few brands who has entered this category with 100% Make in India concept where till now only unorganized players were ruling with Made in China products.

Easy to install and operate, these downlighters are available in 4 color



combination (White-Pink, White-Blue, White-Green and White-Red). Customers can just change the colour of the downlighter by flipping the ON/OFF



switch. No extra wiring is needed. The product withstands all the stringent field conditions like 4KV surge and 440V AC high voltage.

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